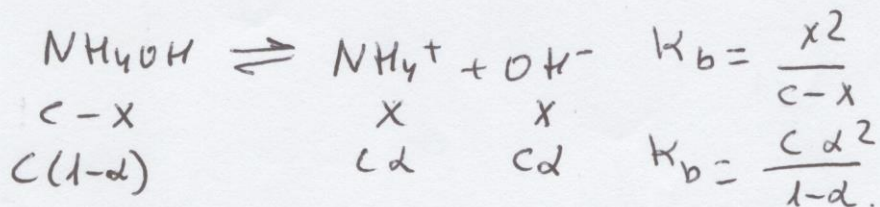


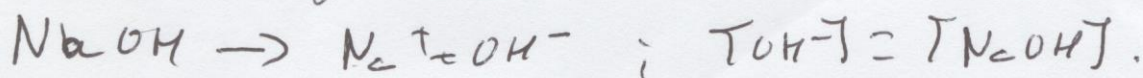
(14)

$$C = 0.1 \text{ M.}$$

$$K_b = 1.8 \cdot 10^{-5}$$



$$1.8 \cdot 10^{-5} = \frac{0.1 \cdot \alpha^2}{1-\alpha} \quad ; \quad \alpha = \sqrt{\frac{1.8 \cdot 10^{-5}}{0.1}} = 0.0134 \Rightarrow \alpha = 1.3\%$$

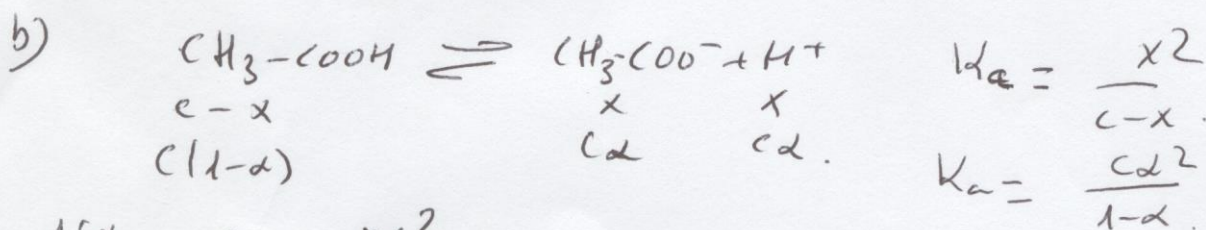


$$[\text{OH}^-] = c \cdot \alpha \quad ; \quad [\text{OH}^-] = 0.1 \cdot 0.0134 = 0.00134 \text{ M}$$

$$[\text{NaOH}] = 0.00134 \text{ M}$$

(15)

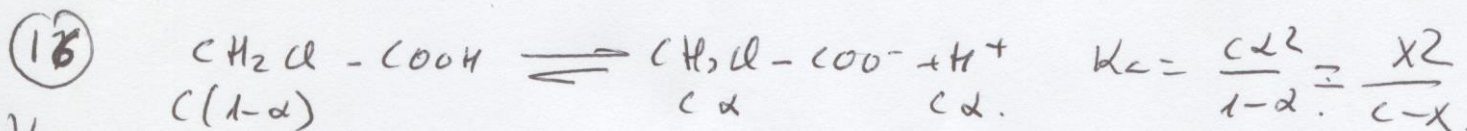
a) $\text{50 mL } 0.4 \text{ M} + \text{H}_2\text{O} \Rightarrow \text{500 mL } 0.04 \text{ M} \quad ; \quad M = \frac{0.4 \cdot 0.05}{0.5} = 0.04 \text{ M}$



$$1.8 \cdot 10^{-5} = \frac{x^2}{0.04-x} \quad ; \quad x^2 = 1.8 \cdot 10^{-5} \cdot 0.04 \quad ; \quad x = 8.5 \cdot 10^{-4} \text{ M}$$

$$[\text{H}^+] = 8.5 \cdot 10^{-4} \text{ M}, \quad \text{pH} = 3.07$$

c) $c \cdot \alpha = [\text{H}^+], \quad 0.04 \cdot \alpha = 8.5 \cdot 10^{-4}, \quad \alpha = 0.021 \Rightarrow 2.1\%$



$$K_a = 1.39 \cdot 10^{-3}$$

$$c = 0.01 \text{ M}$$

$$1.39 \cdot 10^{-3} = \frac{x^2}{0.01-x} \quad ; \quad x = 3.097 \cdot 10^{-3}$$

$$[\text{H}^+] = 3.097 \cdot 10^{-3}$$

$$\text{pH} = -\log 3.097 \cdot 10^{-3} = 2.5$$

$$3.097 \cdot 10^{-3} = 0.01 \cdot \alpha, \quad \alpha = 0.31 \quad ; \quad \alpha = 31\%$$

b) $\rho_m = 94 \frac{\text{g}}{\text{mol}}, \quad ; \quad 0.01 = \frac{m_s}{2 \text{ L}} \quad ; \quad m_s = 0.02$

$$m_s = 0.02 \cdot 94 = 1.88 \text{ g}$$